

Remarks

Favorable reconsideration of this application, in view of the above amendments and in light of the following remarks and discussion, is respectfully requested.

Claims 1-6 are currently pending in the application; independent Claim 1 having been amended, and Claim 7 having been canceled without prejudice or disclaimer, by way of the present response. Applicants respectfully assert that support for the changes to the claims is self-evident from the originally filed disclosure, including the original claims, and that therefore no new matter has been added.¹

Initially, Applicants respectfully submit herewith an Abstract, as the originally filed application appears not to have included an Abstract.

In the Office Action drawing corrections were requested; restriction to one of two inventions was required; Claims 1-7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Japanese Publication No. 60-128012 to Kuzuhara or Japanese Publication No. 10-226221 to Harada in view of U.S. Patent No. 4,821,792 to Bednarek and either Japanese Publication No. 58-221714 to Kojima et al. (Kojima) or U.S. Patent No. 5,309,731 to Nonoyama et al. (Nonoyama); Claim 4 was rejected under 35 U.S.C. § 103(a) as being unpatentable over the prior art as applied to Claim 1, and further in view of U.S. Patent No. 4,373,666 to Williams; Claim 3 was rejected under 35 U.S.C. § 103(a) as being unpatentable over the prior art as applied to Claim 1, and further in view of U.S. Patent No. 5,341,868 to Nakata or U.S. Patent No. 5,316,074 to Isaji et al. (Isaji) or U.S. Patent No. 4,860,549 to Murayama; Claim 5 was rejected under 35 U.S.C. § 103(a) as being unpatentable over the prior art as applied to Claim 1, and further in view of U.S. Patent No. 4,454,984 to Shaltis or U.S. Patent No. 4,905,893 to Kiskis or U.S. Patent No. 5,273,105 to Higashihara et al. (Higashihara).

¹ Applicants respectfully assert that support for the amendment of independent Claim 1 is provided, in part, by page 14, lines 9 and 10, of Applicants' originally filed specification.

As stated above drawings corrections required and approved in parent application no. 09/326,609 were requested in the current application. In response, Applicants respectfully assert that the originally filed drawings in the current application are believed to include all of the requested corrections.

As stated above restriction to one of two inventions was required. In response, Applicants respectfully elect without traverse the invention of group I, Claims 1-6, drawn to a vehicular air conditioner. Applicants have canceled non-elected Claim 7 without prejudice or disclaimer.

As stated above Claims 1-7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kuzuhara or Harada in view of Bednarek and either Kojima or Nonoyama. Claim 4 was rejected under 35 U.S.C. § 103(a) as being unpatentable over the prior art as applied to Claim 1, and further in view of Williams. Claim 3 was rejected under 35 U.S.C. § 103(a) as being unpatentable over the prior art as applied to Claim 1, and further in view of Nakata or Isaji or Murayama. Claim 5 was rejected under 35 U.S.C. § 103(a) as being unpatentable over the prior art as applied to Claim 1, and further in view of Shaltis or Kiskis or Higashihara. Applicants respectfully assert that the amendments to the claims have overcome the rejections for the following reasons.

The present invention is directed to a vehicular air conditioner. Independent Claim 1 recites a compressor unit equipped with a compressor, a four-way valve and a throttling resistance in a refrigerant path. An indoor heat exchanger is connected to one side of the compressor unit by the refrigerant path, the indoor heat exchanger effecting heat exchange between a refrigerant and intake air. An outdoor heat exchanger is connected to another side of the compressor unit by the refrigerant path, the outdoor heat exchanger effecting heat exchange between the refrigerant and outside air.

A reversible heat pump is connected to the indoor heat exchanger in the refrigerant path, the heat pump executing a cooling operation and a heating operation by switching a direction of flow of the refrigerant in the refrigerant path. The heat pump includes an air distribution fan positioned upstream of the indoor heat exchanger, a coolant heat exchanger positioned downstream of the indoor heat exchanger, a damper arranged adjacent to the coolant heat exchanger, the damper configured to switch an air flow path between a fully closed condition leading through the coolant heat exchanger and a fully opened condition leading through an air bypass space above the coolant heat exchanger and through the coolant heat exchanger, the damper not closing a heater core when the damper fully opens the air bypass space and when the damper fully closes the air bypass space, and a casing surrounding in sequence the air distribution fan, the indoor heat exchanger, the damper and the coolant heat exchanger, the casing serving as the air flow path for the intake air.

An engine cooling water system is connected to the coolant heat exchanger of the heat pump but arranged outside of the casing. Means are used for positioning the damper in the fully opened condition such that the coolant heat exchanger is made an air intake flow path in addition to an air flow path of the air bypass space during the cooling operation.

The engine cooling water system includes a coolant bypass valve connected between a primary side flow path and a secondary side flow path for engine cooling water to bypass the coolant heat exchanger. The valve is disposed such that when the damper fully opens a full quantity of the engine cooling water flows to the secondary side flow path.

Applicants respectfully assert that none of Kuzuhara, Harada, Bednarek, Kojima, or Nonoyama teaches or suggests the claimed features of a valve disposed such that a full quantity of engine cooling water flows to a secondary side flow path to bypass a coolant heat exchanger when a damper fully opens, as recited in independent Claim 1.

Applicants respectfully assert that the claimed features recited in independent Claim 1 can provide numerous advantages. By way of specific non-limiting examples, Applicants respectfully assert that the claimed features of a valve disposed such that a full quantity of engine cooling water flows to a secondary side flow path to bypass a coolant heat exchanger when a damper fully opens can result in an increase of a cooling capacity of intake air as compared to an arrangement in which the cooling water does not bypass the coolant heat exchanger, because the intake air in the claimed arrangement is not heated by the engine cooling water heated by the coolant heat exchanger.²

Further, Applicants respectfully assert that Nonoyama at most appears to disclose a heat exchanger 86 acting as a heater.³ In contrast, in the claimed invention, because the damper fully opens and the engine cooling water does not flow to a heater core but rather flows to the secondary side flow path, an air cooling capability is increased, as discussed above. Applicants respectfully assert that Nonoyama, however, does not achieve such a result.

Applicants respectfully note that Williams, which is discussed in the Office Action with respect to dependent Claim 4, at most appears to disclose a valve that switches a flow of engine cooling water between a heating operant and a cooling operation, to enable the cooling water not to flow to a heater core during the cooling operation. Applicants respectfully assert that Williams does not disclose, however, that an air cooling capability is increased by switching a flow of cooling water, as recited in the claims.

Thus, Applicants respectfully assert that none of the applied references suggest the features recited in the claims, and that therefore it would not have been obvious for one skilled in the art to conceive the claimed invention based on a combination of the references.

² Page 14, lines 9-15, of Applicants' originally filed specification.

³ Column 23, lines 39-45.

In particular, independent Claim 1 recites “wherein the engine cooling water system includes a coolant bypass valve connected between a primary side flow path and a secondary side flow path for engine cooling water to bypass the coolant heat exchanger, and wherein the valve is disposed such that when the damper fully opens a full quantity of the engine cooling water flows to the secondary side flow path.” Thus, Applicants respectfully request that the rejection of independent Claim 1 under 35 U.S.C. § 103(a) be withdrawn, and the allowance of independent Claim 1.

Applicants respectfully assert that Claims 2-6 are allowable for the same reasons as independent Claim 1 from which they depend, as well as for their own features. Thus, Applicants respectfully request that the rejections of dependent Claims 2-6 under 35 U.S.C. § 103(a) be withdrawn, and the allowance of dependent Claims 2-6.

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal Allowance. A Notice of Allowance for Claims 1-6 is earnestly solicited.

Application No. 10/644,728
Reply to Office Action of August 30, 2004

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact the undersigned representative at the below listed telephone number.

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22850

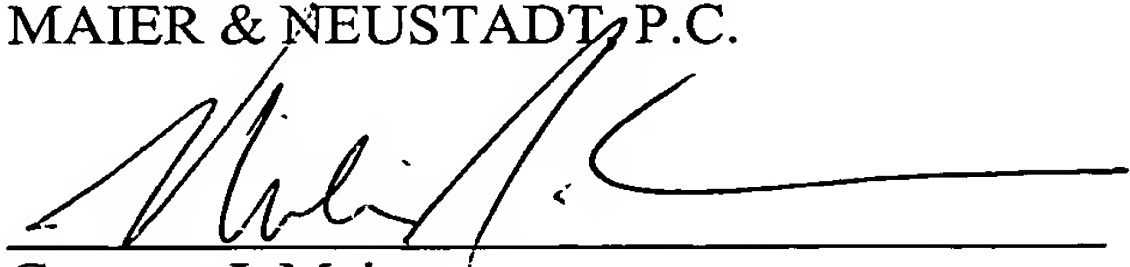
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